IN THE CLAIMS

1.   (Cancelled).

2.   (Cancelled).

3.   (Cancelled).

4.   (Cancelled).

5.   (Cancelled).

6.   (Cancelled).

7.   (Cancelled).

8.   (Cancelled).

9.   (Cancelled).

10.   (Cancelled).

11.   (Cancelled).

12.   (Cancelled).

13.   (Cancelled).

14.   (Cancelled).

15.   (Cancelled).

16.   (Cancelled).

17.   (Cancelled).

18.   (Cancelled).

19.   (Cancelled).

20.   (Cancelled)

21.   (New)   In a sending station operable in a radio communication system to send

data upon a communication channel susceptible to distortion, the sending station having an

antenna transducer at which the data to be sent is transduced into electromagnetic form, an

improvement of apparatus for placing the data in a form to facilitate communication thereof upon

the communication channel, said apparatus comprising:

a modulator coupled to receive indications of the data, the data forming a

first code–matrix and at least a second code-matrix, said first and at least second code-matrices

formed of code symbols, and correspond to a shortest error event, mathematical differences

between the code symbols of the first and at least second code-matrices forming a difference

matrix, the code symbols of the first and at least second code-matrices selected such that the

difference matrix multiplied together with a hermetian matrix thereof is proportional to an

identity matrix for at least the shortest error event.

22.   (New)   The modulator of claim 21 wherein the code symbols of the first and at

least second code-matrices are selected such that the difference matrix multiplied together with

the hermetian matrix thereof substantially corresponds to the identity matrix multiplied together

with a selected constant.

23.   (New)   The apparatus of claim 22 wherein the selected constant is selected to

maximize Euclidian distances between first and at least second codewords defined by the first

and at least second code matrices.

24.   (New)   The apparatus of claim 21 wherein said modulator comprises a symbol

assignor, said symbol assignor for assigning the code symbols to form each of the first and at

least second code-matrices of values such that the difference matrix multiplied together with the

hermetian matrix thereof is proportional to the identity matrix.

25.   (New)   The apparatus of claim 21 wherein said modulator further comprises a

mapper coupled to said at least one antenna transducer and adapted to receive the code symbols

of the first and at least second code-matrices, said mapper for mapping the code symbols to the

antenna transducer.

26.   (New)   The apparatus of claim 21 wherein said modulator comprises a space-

time modulator that exhibits a unitary rate of modulation.

27.   (New)   The apparatus of claim 21 wherein the code symbols formed during

operation of said modulator comprise PSK-modulated (Phase Shift Keying- modulated) symbols.

28.   (New)   The apparatus of claim 21 wherein the antenna transducer of the sending

station comprises a first antenna element and at least a second antenna element, and wherein

separate ones of modulated symbols formed by said modulator are applied to separate ones of the

first and at least second antenna elements.

29.   (New) In the radio communication system of claim 28, in which the data

communicated upon the communication channel is transmitted to a receiving station, a further

improvement of apparatus for the receiving station, said apparatus further comprising:

a demodulator coupled to receive indications of the data once received at

the receiving station, said demodulator for demodulating the indications of the data provided

thereof.

30.   (New) The apparatus of claim 29 wherein said demodulator performs joint

demodulation and decoding operations.

31.   (New) In a method of communicating in a radio communication system having a

sending station operable to send data upon a communication channel susceptible to distortion,

the sending station having an antenna transducer at which the data to be sent is transduced into

electromagnetic form, an improvement of a method for placing the data in a form to facilitate

communication thereof upon the communication channel, said method comprising:

applying indications of the data to a modulator, the data forming a first

code–matrix and at least a second code-matrix, said first and at least second code-matrices

formed of code symbols, and correspond to a shortest error event, mathematical differences

between the code symbols of the first and at least second code-matrices forming a difference

matrix, the code symbols of the first and at least second code-matrices selected such that the

difference matrix multiplied together with a hermetian matrix thereof is proportional to an

identity matrix for at least the shortest error event; and

transducing the data into electromagnetic form at the antenna transducer.

32.   (New) The method of claim 31 wherein the code symbols of the first and at least

second code-matrices are selected such that the difference matrix multiplexed together with the

hermetian matrix thereof substantially corresponds to the identity matrix multiplied together with

a selected constant.

33.   (New) The method of claim 32 wherein the selected constant is selected to

maximize Euclidean distances between first and at least second codewords defined by the first

and at least second codewords.

34.   (New) The method of claim 31 further wherein said operation of modulating

comprises assigning the code symbols to form each of the first and at least second code-matrices

of values such that the difference matrix multiplied together with the hermetian matrix thereof is

proportional to the identity matrix.

35.   (New) The method of claim 34 further comprising the operation of mapping the

code symbols to the antenna transducer.

36.   (New) The method of claim 31 wherein modulation performed during said

operation of modulating is performed at a unitary rate.

37.   (New) The method of claim 31 wherein code symbols formed during said

operations of forming comprise PSK-modulating (Phase Shift Key) modulated symbols.